

Implementing the Water Environment and Water Services (Scotland) Act 2003:

Scotland's Water: Future Directions

A Consultation

January 2009



FOREWORD

The Water Framework Directive (WFD) is changing the way we manage Scotland's water environment. We need to ensure that water use is sustainable; and to this end the WFD requires us to protect and improve the quality and quantity of our water environment, and the health of aquatic plant and animal communities in our rivers, lochs, estuaries and groundwaters.

SEPA has published for consultation the first draft River Basin Management Plans (RBMPs) for the Scotland River Basin District and the cross-border Solway Tweed River Basin District (in partnership with Environment Agency). Once finalised in 2009, the plans will provide Scotland with a comprehensive framework for coordinating and delivering the sustainable management of our water resources.

The development of the draft RBMPs has identified that we can make significant progress towards our aims for Scotland's water environment. The draft RBMPs outline the current status of the water environment, identify where it requires protection or improvement, and describes the measures proposed to achieve the draft objectives. However, they also identify that there are gaps in the suite of measures available to manage key pressures on our water environment.

Ministers have indicated that we should aim to continue to make proportionate and cost-effective improvements, that will make a real difference. This consultation paper sets out proposals on how we might take this forward.

Several key reports have been published to support the consultations on SEPA's draft RBMPs. We suggest that you may wish to read these documents in tandem with this consultation.

These key documents include:

Proposals for management of the water environment:

- draft River Basin Management Plan for Scotland River Basin District
- draft River Basin Management Plan for Solway Tweed River Basin District

An assessment of the environmental implications of implementing the draft RBMPs:

- Strategic Environmental Assessment of the draft Scotland River Basin Management Plan
- Strategic Environmental Assessment of the draft Solway Tweed River Basin Management Plan

An impact assessment of costs and benefits of implementing the proposed objectives outlined in the draft RBMPs:

- Impact Assessment of the River Basin Management Plan for Scotland River Basin District
- Impact Assessment of the River Basin Management Plan for Solway Tweed River Basin District

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1. PURPOSE

This consultation sets out proposals for continuing action to support progress towards the successful delivery of our long-term ambitions for Scotland's water environment.

These proposals are intended to promote debate on the programme of measures to manage the quality of Scotland's water environment during successive river basin planning cycles. They are based on an assessment of the proposed objectives set out in the draft River Basin Management Plans, and a review of the gaps in our implementation programme.

Ministers wish to ensure continued improvement of Scotland's water environment over the short, medium and long term. Whilst the objectives set out in the draft RBMP will achieve significant results, they are only a start. Ministers consider that we must aim beyond that over the longer term. They recognise that our rate of improvement must be proportionate and cost-effective. The options as set out in this consultation paper can all make a contribution to that progress, but will have different relative impacts and costs. In order to allow a practicable set of priorities to be established to guide our longer term approaches and future funding and implementation over the period to 2027, Ministers would be grateful to hear your views.

2. CONSULTATION ARRANGEMENTS

Please send your views and comments on the proposals set out in this document to:

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Responses should reach us by 3 April 2009. Earlier responses would be welcome.

3. INTRODUCTION

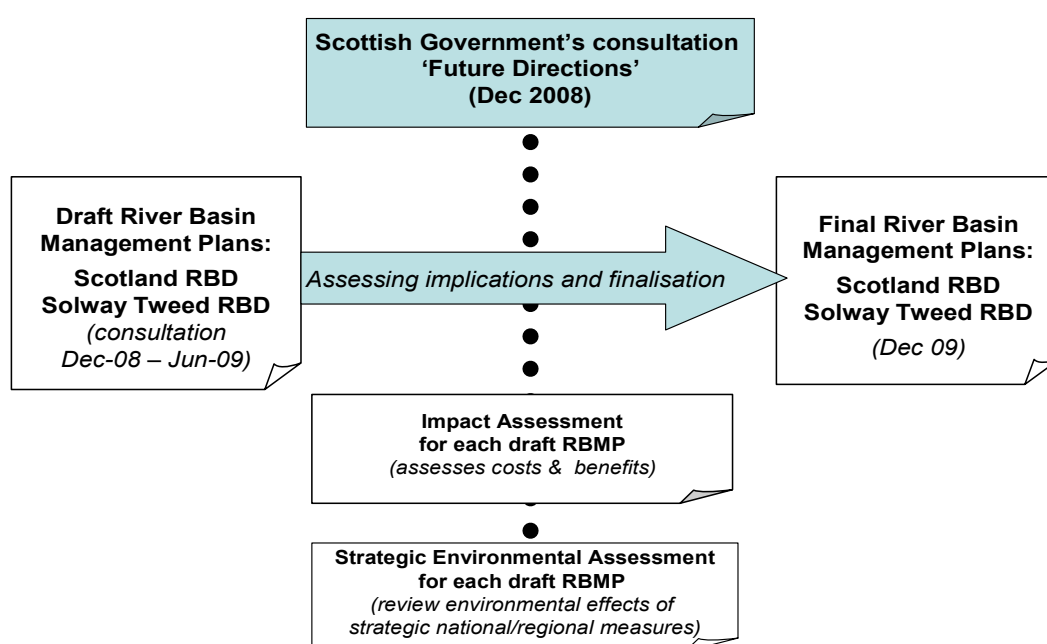
Scotland has a reputation for having a high quality water environment. Our rivers, lochs, estuaries and seas attract visitors from all round the world. They are key to our welfare, providing resources for water supply and hydropower generation. They are also very important for our economy, supporting successful industries such as salmon farming, shellfish farming, tourism and distilleries. We need to manage these resources sustainably for the benefit of future generations.

The principal mechanism for maintaining and delivering improvements to Scotland's water environment is the river basin management planning process. The draft River Basin Management Plans (RBMPs) for the Scotland and Solway Tweed River Basin Districts (RBDs) have identified that with our existing measures and funding levels we can make considerable progress towards our long-term goals for Scotland's water environment. However, this process has also identified that there are gaps in the measures available to manage key pressures. We are therefore considering a range of additional measures and actions that will help us make continued progress over successive planning cycles towards our long-term aims for Scotland's water environment in a proportionate and sustainable way.

This consultation aims to highlight:

- where potential additional measures may be required;
- what such actions might be; and
- the benefits of undertaking additional measures.

There are a number of consultations running concurrently to inform the development of the final RBMPs in 2009. The key documents are the draft RBMPs for Scotland and Solway Tweed RBDs. These are supported by Impact Assessments which consider the costs and benefits of achieving the provisional objectives described in the draft RBMPs; and Strategic Environmental Assessments which look at wider environmental issues. The diagram below illustrates how these fit together, and where this consultation sits within that package.



4. POLICY FRAMEWORK FOR PROTECTING THE WATER ENVIRONMENT

4.1 An integrated policy framework

The Water Environment and Water Services (Scotland) Act 2003 (WEWS) transposed the requirements of the Water Framework Directive into Scots law and introduced a new framework to manage our rivers, lochs, estuaries, groundwater and coasts. This requires a holistic and integrated source-to-sea approach and is a significant shift in water resource management in Scotland.

Our aim is to establish an integrated policy framework where there is an appropriate balance between the protection and improvement of the water environment and its use for sustainable social and economic development. In order to achieve this in a proportionate and cost-effective way, links have been created with the following policy and regulatory areas in particular to ensure appropriate integration:

- Marine and coastal activities
- Freshwater fisheries
- Rural land management
- Sustainable transport
- Land use planning
- Sustainable flood management and surface drainage
- Water supply.

Further information on our approach to integrated WFD delivery can be found in: [Implementing the Water Environment and Water Services \(Scotland\) Act 2003: Promoting an Integrated Approach A Policy Statement](#) (July 2008).

4.2 River Basin Management Plans

Sustainable management of Scotland's water environment will be achieved through the introduction of RBMPs for the Scotland and Solway Tweed RBDs. The draft RBMPs were published in December 2008 by SEPA (jointly with the Environment Agency for the Solway Tweed district). The final RBMPs will be published in December 2009 and updated every 6 years thereafter.

The draft RBMPs identify potential improvements to the water environment that are technically feasible and proportionate, and consideration of how and when these improvements can be made over 3 planning cycles to 2027.

The draft Plans have taken into account Ministers' policy statement on "[Principles for setting objectives for the River Basin Management Plan](#)", which set out our approach to setting **environmental objectives** for the water environment.

The aims of the RBMPs are described below.

What the RBMPs aim to achieve

The environmental objectives established by the WFD for surface water bodies (lochs, rivers, estuaries and coastal water bodies) are to:

- prevent deterioration in status;
- aim to achieve good ecological and chemical status by 2015;
- aim to achieve good ecological potential for artificial and heavily modified water bodies by 2015;
- achieve the objectives and comply with the standards for protected areas, where relevant;
- reduce pollution from priority substances and cease discharges, emissions and losses of priority hazardous substances;
- promote sustainable water use;
- contribute to mitigating the effects of floods and droughts.

The environmental objectives for groundwaters are to:

- prevent deterioration in status;
- achieve good quantitative and chemical status by 2015;
- reverse any significant and sustained upward trend in pollutant concentrations;
- comply with objectives and standards for protected areas, where relevant; and
- prevent or limit input of pollutants into groundwater.

The RBMPs will aim to achieve these objectives, and the drafts set out our provisional environmental objectives over 3 planning cycles to 2027.

4.3 Sustainable economic growth

The sustainable management of our water environment as set out under WEWS and delivered through RBMPs is directly contributing to the delivery of sustainable economic growth, the purpose of the Government's Economic Strategy¹. In particular the RBMPs help achieve a number of the Government's five strategic objectives; most directly to "Improve Scotland's natural and built environment and the sustainable use and enjoyment of it" to enable a greener Scotland. Ensuring there is sufficient capacity for businesses to make sustainable use of our water environment will contribute to the wealthier & fairer objective. And provision of a high quality water environment will also enable people to sustain and improve their health, both through access to good quality drinking water but also through recreational activities, thus contributing to a healthier Scotland.

Thus the achievement of Ministers' long term ambitions for Scotland's water environment will also help in delivering the Government's economic objectives.

4.4 Addressing climate change issues

The change in rainfall patterns, temperature and sea levels due to climate change will have a significant impact on the water environment. RBMPs will help deliver sustainability by contributing to the mitigation of climate change (for example through the promotion of source control of pollution) and adaptation to climate change (for example by helping to create a healthy and resilient river system).

¹ [The Government Economic Strategy](#)

4.5 Mechanisms for protection and improvement

The setting of provisional environmental objectives has taken into account a range of mechanisms and measures already available that can be used to promote or ensure action to protect and improve the water environment. These include:

- regulatory mechanisms such as the Water Environment (Controlled Activities) Regulations (Scotland) 2005 (CAR);
- measures associated with other European directives (e.g. Urban Waste Water Directive) but which also contribute to achieving WFD objectives;
- existing sources of public funding such as the Scotland Rural Development Programme² and Quality and Standards investment programme for water infrastructure; and
- partnerships with public bodies and non-government organisations promoting on-the-ground action.

Considering only those measures which are within the scope of existing legislative provisions and levels of funding enables us to begin to assess the extent to which these can help achieve our vision for Scotland's water environment; and highlight where there may be gaps in our policy and funding framework.

² [Scotland Rural Development Programme](#)

5. MAINTAINING PROGRESS TOWARDS 2027

5.1 What improvements might the RBMPs deliver?

The draft RBMPs for the Scotland and Solway Tweed RBDs indicate that 57% of waters in Scotland are currently at good status or better; a strong position compared with much of Europe. The RBMPs also indicate that with current funding levels and delivery mechanisms we can make significant improvements by 2027. The following table illustrates the current and predicted status of Scotland's water bodies.

	High/ Maximum		Good		Moderate		Poor		Bad		Not yet assessed/ predicted ³	
	2007	2027	2007	2027	2007	2027	2007	2027	2007	2027	2007	2027
Rivers	184	198	832	1053	719	599	260	121	66	47	0	43
Lochs	84	93	61	69	45	33	27	19	7	7	0	3
Estuaries	14	15	8	9	20	15	0	1	0	0	0	2
Coastal	258	267	147	156	38	20	0	0	0	0	0	0
Groundwater			270	292			73	50			0	0
HMWBs	2	2	149	223	9	10	82	30	36	13	141	141
AWBs (canals)	0	0	27	27	0	0	0	0	0	0	13	13
Total	542	575	1494	1829	831	677	442	221	109	67	154	202

These projections predict a significant shift in water bodies from moderate to good; as well as improvements in a considerable number of water bodies currently classed as poor. Some are also predicted to move to high status. Thus we would expect to deliver significant improvements across the full range of status classes, with 67% of Scotland's water bodies classified as good status or better by 2027.

This is an excellent foundation on which to build, and we wish to maintain this progress with a view to ensuring we achieve our ambitions for Scotland's water environment. Equally we recognise the need to evaluate the effectiveness of current and new measures, and to ensure that any additional measures deliver cost-effective and proportionate benefits over the long-term.

During the first river basin management planning cycle, we expect that our knowledge of the pressures on the water environment and how they should be managed will be improved. Monitoring programmes introduced in 2007 to collect data on the water environment will help improve our evidence-base, firming up SEPA's confidence in its status assessments but also clarifying where further measures are likely to be required.

³ Certain water bodies have not yet been assessed (HMWBs) or had objectives for 2027 set due to on-going discussions with operators.

It is clear for certain pressures that our management framework is not sufficiently comprehensive to meet our objectives by 2027. The objective setting process indicates that the following environmental problems in particular are likely to need additional measures to reduce their impacts:

- nutrient enrichment in our rivers, lochs, estuaries and groundwaters
- changes to the physical habitat of our rivers/ barriers to fish migration; and
- invasive non-native species

5.2 Proposed additional measures

In order to deal effectively with these continuing pressures, we need to develop new policy approaches and identify other measures that could help make additional progress. In developing these proposals we will continue to be guided by the following principles:

- improving evidence as to the scale of the impact created by the most significant pressures; and
- identifying the most cost-effective and proportionate action which could be taken to manage these pressures.

The measures currently proposed are described in more detail in the following table.

Pressure	Potential Measure	Description
Pollution - diffuse and point source	Source control – increased action in rural catchments	Establishment of a diffuse pollution management Advisory Group to develop and implement a diffuse pollution management plan for Scotland. Further development of Catchment Management Plans in catchments where diffuse pollution associated with nutrients, pesticides, faecal organisms and excess sediment may cause failure against WFD standards and protected area requirements by 2027.
	Source control - low phosphate detergents	Support UK-wide action to remove phosphates from detergents for domestic use (including laundry and dishwater detergents) for use in the UK by 2015. This would aim to reduce overall phosphate loadings discharged to the water environment.

Pressure	Potential Measure	Description
Morphological impacts	The development and implementation of a restoration policy framework	<p>The restoration policy framework would enable the delivery of on-the-ground actions that could improve water bodies downgraded by historic engineering impacts.</p> <p>Develop partnership projects and/or undertake a programme of work to remediate sites that have been impacted by past human activities affecting morphology. This may include cost-effective activities to:</p> <ul style="list-style-type: none"> • Remove barriers to fish migration; • Address loss of riparian vegetation; • Look at sustainable forms of urban development and flood defence in place of hard structures; • Reclaim agricultural land in coastal areas; • Catchment-scale restoration programmes. <p>This would be undertaken in the context of government policy framework that would consider implementation issues and the wider benefits and implications.</p>
Invasive non-native species	Prevent the further spread of invasive non-native species which could result in the deterioration in status of water bodies	<p>Undertake a programme of activities such as monitoring and surveillance, contingency planning and rapid response measures aimed at preventing the establishment of up to five species in key areas.</p> <p>The species being considered are: American Signal Crayfish (<i>Pacifastacus leniusculus</i>); Chinese mitten crab (<i>Eriocheir sinensis</i>); Common Cordgrass (<i>Spartina anglica</i>); Wireweed (<i>Sargassum muticum</i>) and Australian Swamp Stonecrop (<i>crassula sp.</i>).</p>

5.3 Ensuring proportionate implementation

It is recognised that developing an integrated and planned approach to implementation must be done over successive river basin management planning cycles.

The proposals described in this paper are intended to provide a platform for developing the most appropriate and cost-effective actions which will enable us to maximise the sustainable use of Scotland's water resources over future cycles.

The success of the measures proposed in the following sections will be largely dependant on our ability to work in partnership and secure the necessary public investment. But there will be areas where private sector contributions will also be necessary. In any action plan, the benefits must be proportionate to the costs. In order to design the programme of measures with the greatest impact, we would welcome your thoughts on the relative priorities of the proposals outlined in this paper, to help inform future funding and implementation decisions over the period to 2027.

6. POLLUTION – THE CASE FOR SOURCE CONTROL

Generally Scotland has a strong regulatory framework in place to manage point source pollution and we have an increasing understanding of the causes and effects of pollution. Significant improvements have been made to water quality over recent decades as a result. In addition record levels of investment have been made to improve our water industry's infrastructure, and the Scottish Government is committed to continuing investing in our water industry to maintain this trend of improvements in future planning cycles. Nevertheless pollution continues to be a major threat to water quality in parts of Scotland, from both urban and rural sources.

In urban areas, pollutants in domestic and commercial waste water are normally removed at treatment plants before discharge to the water environment. Water running off our urban landscape can contain pollutants which then run into water courses. In some areas there are combined surface and waste water systems and during storm events there is a risk of this overflowing into the water environment through the Combined Sewer Outfall. Work is ongoing to reduce overflows from Combined Sewer Overflows as well as actions to reduce the run-off of pollutants from industrial estates.

In rural areas, with dispersed populations, there is a reliance on septic systems for individual households or small plants (managed by Scottish Water), which may not have the facilities to treat certain substances before discharge. Work is ongoing to improve the standards of septic systems and to understand and reduce their cumulative impacts on the water environment.

Rural land use activities (agriculture, forestry, amenity sector etc) can result in diffuse pollution which affects the quality of rivers, lochs, estuaries and coasts and ground waters. The transport of potential pollutants such as nutrients (nitrates, phosphorus), eroded soil, pesticides and other chemicals can cause contamination and have impacts on the ecology and uses of the water environment.

Diffuse agricultural pollution is the most significant cause of pollution in rivers, lochs and groundwater in Scotland.

New regulatory and financial mechanisms have recently come into effect and supported by advice and guidance these have the potential to deliver improvements in the water environment. However there are areas where diffuse pollution is predicted to cause failure against WFD standards and protected area requirements by 2027 and additional actions will be required. In addition further work is required to address diffuse pollution from urban areas.

We will also need to take action to mitigate the effects of climate change. Higher river flows from increased rainfall are likely to increase pollutant loadings to the sea, impacting on bathing waters and shellfish waters. Conversely, reduced river flows from drier periods in summer will provide less dilution for pollutants. We need to take account of these potential impacts when considering our future approach to minimising pollution.

Source control is considered the most effective method to tackle diffuse pollution from rural and urban areas and this consultation examines two approaches:

- Increased action in catchments where diffuse pollution is predicted to cause failure against WFD standards and protected area requirements by 2027.
- Supporting UK wide action to remove phosphates from detergents for domestic use to help reduce overall phosphate loadings to the water environment.

7. SOURCE CONTROL OF POLLUTION – INCREASED ACTION IN CATCHMENTS

The draft RBMPs describe the measures currently available for tackling diffuse pollution in rural and urban areas, and identify that increased action will be required to achieve Ministers' long-term ambitions for Scotland's water environment. The following sections discuss these matters in more detail.

7.1 Draft RBMP measures for rural diffuse pollution

In the first RBMP cycle, we will continue to encourage operators to adopt good practice such as that in the PEPFAA Code⁴, 4 Point Plan⁵, Farm Soils Plan⁶ and the Forests and Water Guidelines⁷. This will be supported through existing legislative mechanisms and funding programmes to provide support for actions which minimise impacts on water bodies. The provisional objectives set out in the draft RBMPs have taken into account these available control measures and actions. Examples for agriculture in the Scotland RBD are summarised below.

Improvement required	Measures	Delivery mechanism
Reduction in nutrient inputs	Nutrient management plans In-field measures to minimise soil erosion Buffer strips Steading measures e.g. Constructed farm wetlands Woodland planting to protect water quality e.g. riparian zone planting	Action under CAR (GBRs) Guidance and enforcement
		NVZ Action Programme Regulations Guidance and enforcement
		Education initiatives, promotion of guidance and advice
		Trial catchment projects and demonstration farms
		Scotland Rural Development Programme measures
Reduction in pesticide inputs	Crop protection management planning Sprayer testing Biobeds Buffer strips	Action under CAR (GBRs) Guidance and enforcement
		Education initiatives, promotion of guidance, information provision and advice
		The Voluntary Initiative for Pesticides
		Scotland Rural Development Programme measures.
Reduction in organic waste (organic matter, faecal pathogens, & ammonia)	Farm waste management plans Management of steading runoff e.g. clean and dirty water separation Constructed farm wetlands Livestock tracks and gates Fencing of water margins	Action under CAR (GBRs) Guidance and enforcement
		Silage, slurry and agricultural fuel oil regulations Guidance and enforcement
		Education initiatives, promotion of guidance, information provision and advice
		Scotland Rural Development Programme measures.
		Trial catchment projects and demonstration farms
Catchment based action	Focus advice and enforcement on identified problem catchments.	Identification of priority catchments, source apportionment, targeting of measures. Continue current catchment management projects.

⁴ [PEPFAA Code](#)

⁵ [Four Point Plan](#)

⁶ [Farm Soils Plan](#)

⁷ [Forests and Water Guidelines](#)

A number of support mechanisms are already in place to facilitate the effective implementation of these measures:

- The Scotland Rural Development Programme 2007-13 identified improving water quality as one of its key outcomes. This is reflected in the increased number of water-related measures in the Rural Development Contracts scheme. Although participation is voluntary, it is hoped that land managers will take the opportunity to benefit from the incentives offered and use them to complement the requirements of the diffuse pollution general binding rules introduced through CAR.
- Scotland's Environmental and Rural Services (SEARS) is a partnership of nine public bodies aiming to provide Scotland's rural land managers with an efficient and effective service. This will include providing easy access to information and advice on diffuse pollution control measures

A Scottish Government project⁸ evaluating available control measures related to forestry and agriculture has identified that the ongoing uptake of improved practices and changes in land-use has and will continue to reduce pollutant loadings by 2015. Projections of the rate of improvement delivered by the measures described in the table above have been made in the draft RBMPs, and indicate a 10-20% improvement in pollution by 2015.

While the current measures are expected to take us a considerable step forward, there will however be areas of Scotland where additional action is required to meet our long-term goals for a sustainable water environment.

7.2 Draft RBMP measures for urban diffuse pollution

The draft RBMPs also set out measures to address urban diffuse pollution. Examples of these for the Scotland RBD are presented below. The measures requiring Sustainable Urban Drainage Systems (SUDS) for new development should prevent further deterioration in status caused by urban drainage. If the additional changes identified below are implemented by 2015 then the draft RBMP for the Scotland RBD predicts an improvement by one status class for all rivers predicted to be downgraded by urban pollution by 2027.

Improvement required	Measures	Delivery mechanism
Reduction in pollution and flood risk	Provision of SUDS for urban roads	SUDS for roads- design criteria for local authority road engineers.
	Improvements in surface water discharges	Identification of improvement within Scottish Water investment programme Action under CAR
	Development of regional SUDS as part of urban regeneration	Local Authority development plans.
	Development of integrated drainage	Joint working groups such as Metropolitan Strategic Drainage Plan.
		Development planning incorporating regional SUDS for major areas of regeneration
	Education initiatives to improve management of surface water.	Publicity and visits by trade effluent staff.

Note: this table does not list the actions which are already being taken to ensure that new developments include SUDS. Instead, it identifies new or developing measures which are required to make further improvements.

⁸ ADAS report reference

7.3 Proposed additional action to manage diffuse pollution

To achieve Ministers' ambitions for a greener, healthier, wealthier & fairer Scotland we will need to invest in additional management of diffuse pollution and identify a suite of objectives and actions required in catchments affected by diffuse pollution from rural and urban activities.

7.3.1 Diffuse Pollution Management Advisory Group

The Scottish Government has asked SEPA to use its powers under section 17 of the WEWS Act to form a Diffuse Pollution Management Advisory Group. Chaired by SEPA, the group will report to the river basin planning National Advisory Group and comprise stakeholders with an interest in urban and rural diffuse pollution to ensure a cross section of rural, urban, environmental, and biodiversity interests. Ideally the group would be supported by other groups with an interest in diffuse pollution (such as the Scottish SUDS Working Party and Scottish Agricultural Pollution Group). This approach would create robust governance and decision-making mechanisms for the effective delivery of the RBMPs.

The group will be responsible for the successful development and implementation of a diffuse pollution management plan for Scotland.

This will entail assessing, evaluating, promoting, developing, and coordinating diffuse pollution measures across Scotland.

As a starting-point, the draft RBMPs have identified where diffuse pollution may cause failure against WFD standards and protected area requirements by 2027, and where additional action is likely to be required. We will need to develop greater confidence in these assessments, through further monitoring and research to determine the effectiveness of the existing measures. Such an evaluation exercise will help refine our predictions, and provide increasing evidence of those catchments where action needs to be taken for the long-term achievement of Ministers' goals. Priorities will include designated protected areas, such as bathing waters, shellfish waters and drinking water protected areas. Equally we need to ensure that the requirement for such protection is proportionate, by reviewing designations regularly and taking action to de-designate where appropriate.

In tandem with this evaluation and assessment programme, the group will be instrumental in ensuring that there has been adequate implementation of existing measures, both legislative and voluntary; and developing an action plan for promoting the take-up of financial support available through existing mechanisms such as the Scotland Rural Development Programme (SRDP). A review of the SRDP was announced recently and may present an opportunity to ensure financial support is better directed at water-related priorities.

We would expect the group's remit to include the development of an effective suite of new measures to address particular diffuse pollution issues (such as nutrients, pesticides, faecal coliforms) and identify who would be required to undertake action (e.g. development of nutrient management plans by land managers) to reduce pollutant loadings. These measures will also form a framework for providing increased practical support directly to operators to manage those pressures. This could be identified through the rural priorities and measures under the SRDP, other support and advisory services, or through additional funding for catchment related activities such as trialling the use of diffuse pollution audits.

Within the diffuse pollution management framework, catchment management plans (CMPs) are seen as a key part of helping to address diffuse pollution. The plan may highlight particular problem catchments, identifying those priority areas where additional targeted measures may prove beneficial in reducing pollutant levels. CMPs would set out the most

cost-effective suite of measures to address diffuse pollution issues on a catchment by catchment basis. The delivery of these measures could be led through SEARS, SEPA or other external bodies such as SAC working in partnership with land managers and other stakeholders. We would look to the group to develop proposals for the effective delivery of these measures.

Ultimately, if operators do not adopt good practice or take advantage of available support, then further legislative action may need to be considered. The group should provide advice on these matters.

7.3.2 Actions in urban areas

In the urban environment water pollution can arise from many sources including misconnected waste pipes, spills, leaks and intentional disposal of wastes to drains that reach local streams and rivers. Education and raising awareness, as part of the remit of the Diffuse Pollution Management Advisory Group, will be undertaken to highlight the consequences of such actions and the provisions already contained within CAR.

Scotland has already taken the lead in the UK in developing and implementing sustainable drainage technology that is designed to prevent or minimise the contamination of streams that often occurs during severe rainfall events.

As part of the continuing development of sustainable drainage it is proposed to work with Planning and Building Standards colleagues to introduce more sustainable surface water management into new and existing developments. Sustainable Urban Drainage Systems (SUDS) are a requirement, under CAR, for the drainage from most new developments. Source control measures within the curtilage of buildings can include water butts, soakaways, and permeable paving. The widespread use of permeable paving will assist in reducing surface run-off from urban areas. Ministers support a proposed measure within Permitted Development Rights which requires that new or replacement hard surfaces over 5 square metres are either of porous material or drain to a permeable or porous surface.

Awareness raising across all sectors, including domestic, operating in the urban environment will be key to achieving cleaner urban watercourses as well as enhancing the appreciation of an unpolluted environment generally.

7.4 Benefits of proposals

Given the current level of uncertainty as to the effectiveness of the current suite of measures, it is difficult to predict the number of water bodies which would be improved by the proposed measures. However we would anticipate that between 200 and 250 water bodies could be improved through this targeted approach. These estimates will need to be refined during 2009.

As well as protecting and improving the water environment and achieving protected area requirements these additional proposals will:

- help protect public health e.g. by improving the quality of drinking water and of our bathing waters;
- reduce carbon footprints by reducing the need for treatment of, for example, drinking water sources;
- help in adaptation to climate change: for example, fencing off water courses can provide habitat corridors, and a healthy water system is more resilient to climate change impacts; and
- potentially reduce the impacts of flooding.

8. SOURCE CONTROL OF POLLUTION – LOW PHOSPHORUS DETERGENTS

A challenge in Scotland is to manage and reduce excess phosphate loadings in freshwaters, which can lead to eutrophication and downgrade rivers and lochs. There are several sources of phosphate - domestic sewage, agriculture (livestock excreta and inorganic fertilisers) and detergents. The water industry adds small amounts to drinking water (to combat lead piping). A key source of phosphates is domestic cleaning products such as laundry detergents and dishwasher tablets. Reducing the loading to surface waters from phosphate based detergents is necessary to reduce overall phosphate loadings from all sources.

Detergents are estimated to account for 25% of the phosphate entering waste water treatment works (WWTW). In some WWTWs serving large populations, Scottish Water applies tertiary treatment to strip out phosphates. A reduction of phosphates in detergents would reduce Scottish Water's costs where there is such tertiary treatment.

In WWTWs without tertiary treatment, or in rural areas with dispersed populations where there is reliance on septic systems for individual households, phosphates are inevitably discharged to the water environment.

There are now alternatives to phosphates in detergents, and several countries have taken steps to ban the addition of phosphates, at least in laundry detergents, or have made an agreement with the industry not to add them.

8.1 Proposed actions

In February 2008 Defra published a consultation paper considering options for reducing phosphates in laundry detergents. It also identified taking a longer term view with respect to dishwasher detergents. Responses to the consultation had a near-universal view that regulation at a UK level was preferable to a voluntary approach, to avoid market distortions.

Scotland is committed to taking action on the use of domestic laundry cleaning products containing phosphates either along with other UK administrations or on a devolved basis.

Proposed actions for Scottish Government include:

- Support Defra in implementing any future measures on omitting phosphates from detergents in the UK.
- An education initiative on the effects of urban pollution including informing the public on the environmental benefit of, and promoting, the use of phosphate-free products.

8.2 Benefits of proposals

The reduction of phosphates from detergents would be a useful national measure to complement targeted measures for the water industry and agriculture, reducing phosphorus inputs from combined sewer overflows, misconnections and small treatment plants with no phosphorus treatment, and reducing costs of phosphorus removal at WWTWs.

It has been estimated that an 8% reduction in phosphorus concentrations in water bodies generally could result in around 50 water bodies improving their overall status. This measure, when combined with other controls on point and diffuse source pollution, will support overall improvements in water bodies. It will also prevent further deterioration in the water environment, especially those water bodies which may be at risk of deteriorating from good status.

9. ENHANCING MORPHOLOGY: RESTORATION OF HABITATS

The WFD poses a new requirement for the management of morphology pressures on our water environment. There are a range of activities that may cause morphological alterations and impact on water body status. These include impoundments; sediment management; bank reinforcement; embankments; floodwalls; bridges and other crossing structures; in-stream or in-loch structures; channel modifications, and floodplain use.

In Scotland, impacts associated with morphology pressures are the second most important course of environmental damage after diffuse pollution. Diffuse pollution and impacts to morphology often directly damage the condition of habitats.

9.1 Draft RBMP measures to address morphological impacts

The draft RBMPs provide details of morphological impacts on our water environments and the measures we could undertake to address these. Examples of measures to address morphological impacts from historical engineering, urban development and agriculture are summarised below.

Improvement required	Measures	Delivery mechanism
Removal of fish barriers	Remove redundant structures	Fishery management plans and voluntary initiatives
		Action under CAR
Habitat remediation or improvement	Improve physical habitat of surface waters	Partnership projects
		Development control and planning constraints
Reduce hard engineering structures	Removal of man-made factors affecting flooding	Flood management schemes
Catchment based action	Focus advice and improvement projects in priority catchments	Identification of priority catchments
Riparian vegetation	Buffer strips	Action under CAR
	Fencing of water margins	Education initiatives, promotion of guidance and advice
		Trial catchment projects and demonstration farms
		Scotland Rural Development Programme
Habitat remediation or improvement	Improve physical habitat of rivers and lochs	Partnership projects
Floodplain restoration	Set back flood embankments	Partnership projects
	Enhance flood storage via restoration of natural processes	
	Reduce maintenance of channels	

We expect the measures summarised above to contribute to considerable improvements in river habitat by 2015. Application of controls through CAR and through the planning process will also help prevent further deterioration in status.

Despite these measures SEPA still expects changes to the physical habitat of our rivers to be an issue in 2027. Further action to address morphological impacts is needed to achieve our long-term aims for a sustainable water environment. These actions are two-fold:

- Restoration associated with historic urban and rural structures (including flood defence)
- River bank/estuarine impacts associated with agricultural activities (e.g. grazing in water courses, agricultural land claim.)

9.2 Historic urban and rural structures

The Scottish Government is developing a restoration policy framework to deliver on-the-ground actions that could improve water bodies downgraded by historic engineering impacts, for example removing abandoned structures. Details of these proposals are presented in a separate consultation and will tie in with wider planning and regulatory systems (e.g. flood risk management, land management contracts).

As a first step towards this proposed additional action SEPA has secured funding under the current financial settlement to support restoration projects which will help meet good ecological status. Priorities are being identified with the Area Advisory Groups and Responsible Authorities, and activities will be included in the final RBMP in 2009.

SEPA restoration funding programme

From 2008 restoration funding was provided to SEPA to directly fund improvements in the water environment. To make most cost-effective use of the funds available, SEPA is working with others on partnership projects. Projects likely to be funded include:

- re-engineering of rivers to restore their natural profile by recreating meanders
- removal of man-made fish barriers or the provision of fish passage at man-made barriers
- restoration of flood plains, coastal inter-tidal zones and wetlands
- treatment of effluent from abandoned non-coal mines

Every project must deliver improvements to wetlands, rivers, lochs, estuaries or coasts; contribute towards WFD objectives; and where possible deliver a range of environmental, social and economic benefits.

The fund will progressively increase over the next two years towards £1m in 2010/11, and is then expected to continue at the £1m level. Additional funding in future river basin planning cycles will deliver increased benefits.

9.3 River bank and estuarine restoration

There is a close link between the measures and mechanisms required to address diffuse pollution and those required to address the morphological impacts from agricultural production. Our consultation paper on restoration policy describes these interactions in more detail. Essentially we will obtain multiple benefits from certain measures - addressing the morphological impacts of agricultural activities will typically also help to reduce diffuse pollution impacts; and vice versa.

9.4 Benefits of proposals

The additional proposed measures set out in this consultation and the restoration policy framework consultation to address morphological impacts from historical engineering, urban development and agriculture are estimated to improve the status of between 200 and 250 water bodies.

These additional proposed works could also deliver a wider range of environmental or social benefits. For example:

- removing barriers to fish migration improves fisheries and therefore provides economic and recreational benefits;
- removing redundant flood barriers can reduce the risk of flooding and improve biodiversity e.g. creating wetlands and reconnecting flood plains;
- creating/restoring wetlands can improve biodiversity and act as diffuse pollution buffers;
- establishing natural riparian corridors can reduce diffuse pollution and create important wildlife corridors and habitat networks;
- creating more natural river environments in urban areas improves amenity and provides a focus for urban regeneration; and
- improving resilience to climate change - this can include working with rivers to create environments that are less susceptible to erosion, and creating habitats that are less susceptible to changes in temperature.

10. PREVENTION OF INTRODUCTION INVASIVE NON NATIVE SPECIES

Invasive non-native species (INNS) represent a huge threat to biodiversity worldwide and are second only to habitat loss and destruction in causing biodiversity loss. Some invasive non-native species have been deliberately introduced into Scotland through activities such as agriculture, forestry, horticulture and fisheries. Accidental introductions of species have also occurred. Some of these species have a potentially significant impact on the water environment, fisheries, recreation and bank and bed stabilisation.

10.1 Draft RBMP measures for managing INNS

The draft RBMPs recognise ongoing activity to address the impacts of invasive non-native species and prevent their introduction including:

- Work progressing under *The Invasive Non-native Species Framework Strategy for Great Britain (2008)* (GB Framework Strategy)⁹ which provides the overarching Great Britain policy framework and therefore Scotland's policy framework for managing invasive non-native species.
- Research programmes and local work under the Species Action Framework¹⁰. SNH will be taking action under the Species Action Framework, but will focus on meeting the requirements for Protected Areas. Awareness-raising will be the first action taken to support better surveillance and prevention of spread.
- Provision of support activities and funding for research by SEPA.
- Ongoing support through various programmes, e.g. management of invasive species under the Scotland Rural Development Programme.

Actions under the GB Framework Strategy and WFD required to support the first RBMP cycle and to help to prevent deterioration of Scotland's water environment will include:

- Identifying additional actions to manage species that threaten high status sites and good status sites with deterioration, mainly in Protected Areas.
- Establishing an 'alert' system/surveillance/control strategy for problem species (linked to GB Framework Strategy).
- Progressing risk assessment of pathways for entry of problem species into Scotland.
- Undertaking research to identify better control methods.

However, there are currently no planned funding programmes that will support action that will directly improve water bodies that are impacted by invasive species. The exception will be at a local Area Advisory Group level where voluntary action may occur if funding can be secured.

Climate change is likely to increase the likelihood of new species becoming established, cause species that are benign or that currently have only moderate impacts (and that are limited by unfavourable environmental conditions) to become invasive, and combine with other stresses to affect the distribution of native species. Studies have also shown a link between increased water temperature and the success of invasive species in the marine environment. It is therefore essential to have in place a programme of preventative measures to prevent the spread and establishment of invasive non-native species.

⁹ [GB Framework Strategy](#)

¹⁰ [Species Action Framework](#)

10.2 Proposed additional actions for managing INNS

The UK Technical Advisory Group (UKTAG) has identified 'high impact species' for Great Britain. Of these, five (North American signal crayfish, Chinese mitten crab, Wireweed, Common Cordgrass, and Australian swamp stonecrop) have been identified as potential threats to maintaining current status if they became established in the water environment in Scotland.

The proposed additional actions include a programme of activities such as monitoring and surveillance, contingency planning and rapid response measures aiming to prevent establishment of these five species in areas where they are not currently present, in line with the principles of the GB Framework Strategy. Details of these proposed additional measures are shown in the table below:

Package	Actions
Actions required for Scotland RBD (also relevant to Scotland wide outcomes)	
<p>Development of contingency plans and rapid response measures and active programme of eradication and control of:</p> <ul style="list-style-type: none"> North American signal crayfish (<i>Pacifastacus leniusculus</i>) (prevention / eradication in small waterbodies / monitoring of spread) Chinese mitten crab (<i>Eriocheir sinensis</i>) (prevention) common cordgrass (<i>Spartina anglica</i>) (eradication/prevention) wireweed (<i>Sargassum muticum</i>) (prevention) Australian swamp stonecrop (<i>Crassula helmsii</i>) (prevention/eradication in small water bodies) 	<ul style="list-style-type: none"> Establish systems that monitor movement and presence of species that pose a risk for ecology and biodiversity Develop contingency plans and rapid response measures Ensure systems are in place to regulate and prevent the spread of problem species under GB Framework Strategy Eradication trials in water bodies where presence likely to lead to failure of good status Identify key sectors and potential partners for managing species (also awareness-raising)
<p>Best practice and awareness to support prevention of further spread and introductions:</p> <ul style="list-style-type: none"> wireweed (<i>Sargassum muticum</i>) North American signal crayfish (<i>Pacifastacus leniusculus</i>) Australian swamp stonecrop (<i>Crassula helmsii</i>) 	<ul style="list-style-type: none"> Development of awareness material supporting recognition and handling of species Active engagement of key sectors: fishing, aquaculture, etc
Actions required for Solway Tweed RBD (by England and Scotland)	
<p>Development of additional systems for prevention, surveillance and eradication for in the Solway Tweed RBD of:</p> <ul style="list-style-type: none"> North American Signal Crayfish (<i>Pacifastacus leniusculus</i>) (prevention/eradication) Chinese mitten crab (<i>Eriocheir sinensis</i>) (prevention) common cordgrass (<i>Spartina anglica</i>) (eradication/prevention) <p>This would proactively address water bodies and species that are vulnerable.</p>	<ul style="list-style-type: none"> Establish systems that monitor movement and presence of species that pose a risk for ecology and biodiversity. Develop contingency plans and rapid response measures Ensure systems are in place to regulate and prevent the spread of problem species

10.3 Benefits of proposals

The proposed additional actions are estimated to improve around 30 water bodies. These proposed actions will contribute to the implementation of the key actions of the GB Strategy as well as the Scottish Biodiversity Strategy and are likely to lead to direct biodiversity benefits in the areas affected. Some of the proposed actions will compliment and support work underway through the SNH Species Action Framework plans.

One of the most important outcomes from the proposed measures will be the prevention of future problems caused by invasive non-native species. Once an invasive non-native species is well established, it can be very costly and difficult or impossible (particularly in the aquatic environment) to eradicate. The benefits of a preventative approach were described in the GB Strategy and illustrated with reference to the South American water primrose, *Ludwigia grandiflora*. This invasive non-native species is established in France over a wide area costing several million Euros per annum just to control.

As well as the significant costs to the natural environment and biodiversity, invasive non-native species can also have negative impacts on recreational fisheries, can increase maintenance costs for boat owners and lead to considerable costs for water treatment operators as well as increasing the significance of flooding events due to for example river bank erosion. Prevention of the establishment of invasive non-native species will therefore also help our economy and facilitate the Scottish Government's purpose of sustainable economic growth.

11. CONCLUSIONS AND NEXT STEPS

The draft RBMPs for the Scotland and Solway Tweed RBDs illustrate that Scotland has an excellent foundation on which to build a sustainable water environment, supporting a wide range of social and economic activities whilst at the same time preserving a high quality water environment for future generations.

With current policy, legislative and funding mechanisms we are confident that we can achieve 67% of Scotland's water bodies at good status or better by 2027. Nevertheless the draft RBMPs have highlighted that there are gaps in our framework for the more effective management of our water environment. We need to address these gaps, to ensure we have the right tools to deliver our long-term ambitions for Scotland's water environment. Therefore we propose to introduce a phased and proportionate programme of additional measures over the river basin planning cycles to 2027. Current estimates suggest these could potentially improve over 500 additional water bodies. The additional measures proposed are:

- more effective source control of pollutants from both urban and rural sources;
- the development of a restoration policy framework to deliver on the ground actions that will improve water bodies downgraded by historic engineering impacts; and
- undertaking a programme of work to prevent the further spread of invasive alien species which could downgrade water bodies.

These actions will help achieve the delivery of sustainable economic growth and several of the five strategic objectives set out in the Government Economic Strategy – a greener, healthier, and wealthier & fairer Scotland. The actions will further help deliver sustainability by helping in mitigation and adaptation to climate change.

Other additional benefits include:

- improved catchment management and reduction in diffuse pollution resulting in additional water bodies achieving environmental improvements;
- improved biodiversity from removal of invasive non-native species and restoration activity (e.g. restoring natural riparian vegetation);
- increased aesthetic value, economic benefits and recreational opportunities as a result of morphological improvements and removal of invasive non-native species;
- human health benefits from improved drinking water and bathing water quality; and
- additional human health and material asset benefits of increased flood protection arising from morphological improvements and from sustainable drainage systems.

Providing financial support for this programme of improvements will continue to be a key factor in our success. Government investment in our water industry is at a record high. Funding has already been made available to support the management of diffuse pollution through the SRDP, and to begin a programme of restoration projects. We will continue to invest in these programmes to ensure we can meet our long-term aims for Scotland's water environment in a cost-effective and proportionate manner.

Next steps

After due consideration of the responses to this consultation, Ministers will provide guidance to SEPA on the extent to which the final RBMP should take into account the potential improvements which could be delivered by the proposals set out in this document.